New Batteries Charge a $25 Million Idea

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It's been a long journey for Dieter Nowak, President of Micron Corporation, from the home garage to his facilities at the UT Space Institute in Tullahoma. "Starting the company with what I knew best, research, was the only way to go", says Nowak. For Micron, Corporation, creating a technology that not only has military applications but also has world-wide commercial applications, is exactly the type of innovation the Procurement Technical Assistance Center (PTAC) at CIS is designed to help with.

The Challenge

The Tennessee National Guard maintains many heavy trucks at the base in Tullahoma through TACOM (Tank and Automotive Command, US Army). These trucks are designed to carry tanks and other very heavy equipment, but they don't do it often. That is where the need for innovation lies. Micron has developed a new way to think about battery usage and battery life. "We asked TACOM to write an official request," added Nowak, and Col. France at the Tennessee National Guard in Nashville, moved forward.

Each truck has four (4) huge and heavy batteries. Without someone going out each week and running the trucks, the batteries will run down to the point that they will not start the trucks. Needing a jump-start is bad in itself, but the life of the batteries is also significantly shortened each time they run down that far. Plus, the personnel involved with this routine maintenance are costly. Now imagine this cost multiplied by thousands of military trucks across the world.

The Big Idea

Starting in 2000, Micron Corporation, under contract to TACOM, developed a novel Smart Hybrid Power system (SHP) for military vehicles that monitors and controls itself. Each SHP has its own independent microprocessor for monitoring and controlling the specific component. All components communicate with each other via a wireless link to optimize the control of power between battery, capacitor and the various electric loads. All vehicles in a parking lot fleet are monitored and controlled by a single office-based PC which is connected to an RF (Radio Frequency) base station the size of a deck of cards. An optional antenna mast with repeater increases the RF range so that even very large lots can be covered. Then Micron developed a system that replaces two of the batteries, which by the way cost around $300 each, with one capacitor. Capacitors store energy and can discharge the energy quickly; like when a truck needs to be started. By reserving the starting power in the capacitor, Micron, has freed up space, money and weight from each truck. "In our case we're using an internal algorithm to closely examine the battery and capacitor to work as an energy unit," added Nowak.
But that's just the beginning! "Our system allows us to start up vehicles with the click of a mouse," exclaimed Nowak. "This frees up manpower, and reduces the amount of replacement batteries needed by increasing battery life. In fact the saving can be as high

as 60 -70% over the life of a vehicle", says Nowak. Plus, the trucks never run out of power.

The Next Step

It may sound easy to introduce such a money saving innovation as this to the military marketplace, especially since the product was developed under a Small Business Innovation and Research (SBIR) grant, but it is not. That is where the PTAC comes in to the story. "Assisting businesses through the maze of government contracting is what we do", said Joe Flynn, PTAC Program Manager. The PTAC also had to find a way to assist Micron with manufacturing a quantity of SHP's to support the government and commercial needs, perhaps as many as 10,000 units per year. That is where the opportunity for PTAC and MEP (Manufacturing Extension Partnership) to jointly assist Micron began.

To this point Micron had developed and tested only one system. Imagine the difficulties with creating a business that now shows the capability of producing 10,000 units per year when the existing company has only 3 full time employees. This process all begins with creating a Business Plan. MEP, in the persons of Harding Aslinger, CIS Field Consultant, Misty DePriest, the MEP Field Resource person for the Tullahoma area, and Charlie Ragland, Professor of Business at UT Chattanooga were called in by the PTAC to assist in this effort. "We found state funding for this part of the plan," added Flynn.

Months of intensive counseling by the CIS staff have resulted in the successful completion of all necessary planning. "Entrepreneurs have a vision but often no accessories to make it happen. Practical experience is what is needed; a team and small business can't do it alone. I was un-aware that these services are available to me from the state," said Nowak.

The economic impact to Micron and the surrounding community could be as high as $1 million or more in the first complete year following a purchase order with the potential to grow to more than $25 million each year thereafter..

To learn more about how your company can receive research and commercialization assistance from UT-CIS or PTAC, contact Joe Flynn joe.flynn@tennessee.edu or call 1-888-763-7439.